

➤ **ALL EXAM ARE TAKEN BY Business Faculty,DU**

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➤ **Dhaka Bank Cash-2018**

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**Question-01:** A depositor deposited 4000 at x% and 5000 at y% and earned 320 as interest. if he could deposit 5000 at x% and 4000 at y% then he would earn 310. what is value of x and y.

**[Dhaka Bank Cash-2018][Basic Bank AM-2018]**

**Solution:**

According to the question,

$$4000 \times x/100 + 5000 \times y/100 = 320$$

$$40x + 50y = 320$$

$$\text{Or, } 4x + 5y = 32 \text{-----(1)}$$

In the same way

$$(5000 \times x)/100 + (4000 \times y)/100 = 310$$

$$\text{Or, } 5x + 4y = 31 \text{-----(2)}$$

By doing  $(1) \times 5 - (2) \times 4 =$  »

$$20x + 25y = 160$$

$$20x + 16y = 124$$

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 $\text{Or, } 9y = 36$

$$\text{Or, } y = 4$$

Putting value of y in equation (1)

$$4x + 5 \times 4 = 32$$

$$\text{Or, } x = 3$$

So the value of (x,y)=(3,4)

**Ans: (3,4)**

**Question-2:** Selling 12 candies at a price of tk 10 yields a loss of x% and selling 12 candies at a price of tk 12 yields a profit of x% ..What is the value of x ? [South East Bank PO-2017]

**[Dhaka Bank Cash-2018]**

**Solution:**

Let,

12 candies cost price= Tk 100

x% loss selling price=(100-x)

Selling price(100-x) then cp 100 tk

sp 10. "  $\{(100 \times 10)/(100-x)\}$

x% profit selling price=(100+x) tk  
 Selling price tk(100+x) then cp tk100  
 Sp. 12. "  $\{(100 \times 12)/(100+x)\}$

According to the question,  
 $\{(100 \times 10)/(100-x)\} = \{(100 \times 12)/(100+x)\}$   
 Or, x=9.09 So, the value of X is 9.09 **Answer: 9.09**

## BKB-SO-2017

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1: A man deposits 5000 tk. at 5% annual interest for six months. In every six months he withdraws tk.500 from his principal plus interest earned. What is the total amount of interest he received?

[BKB SO -2017][SEBL PO-2017]

Solution:

Given that,

Rate of interest is 5%

Since Interest Rate is semiannual,

$=5/2=2.5\%$

So,

The total amount of Interest rate

he receive against Tk 5000

= Tk.  $(2.5\% \times 5000 + 2.5\% \times 4500 + 2.5\% \times 4000 + 2.5\% \times 3500 + 2.5\% \times 3000 + 2.5\% \times 2500$

$+ 2.5\% \times 2000 + 2.5\% \times 1500 + 2.5\% \times 1000 + 2.5\% \times 500)$

= Tk.  $2.5\% \times 27500$  =Tk. 687.5 Tk. Answer:687.5 Tk

2: A man interest and wages from his investment tk. 5000. If he invests double then the wages increased 50% and total amount is tk. 8000. What is his actual income in terms of wages and interest?

[BKB SO -2017]

Solution:

Let, Interest be Tk. X and Wages be Tk. Y

According to the Question,

$X + Y = 5000$

Or,  $X = 5000 - Y$ ------(1)

When investment is doubled then interest will be doubled

So,

$2x + 150\% \text{ of } Y = 8000$

$\therefore Y = 4000$

From equation (I),  $X + 4000 = 5000 \therefore X = 1000$

Answer: Interest= Tk.1000 and wages= Tk. 4000.

3: 20 workers can finish a work in 30 days. After how many days should 5 workers leave the job so the work is completed in 35 days?

[BKB SO -2017][SBC AM -2016]

Solution:

Let,  
After x days 5 men should leave

20 workers do in 30 days 1 part  
20.....1.....1/30  
20 .....x.....x/30

Now  
worker Remaining=( 20-5)=15  
Day left = (35-x)  
And  
Suppose,  
Total portion of work be =1

then,  
20 men in 30 d. do 1 part  
1 " 1 " " 1/20\*30  
15 men 35-x "  $\frac{15*(35-x)}{20*30}$

According to the question,

$$\frac{x}{30} + \frac{15*(35-x)}{20*30} = 1$$

x=15

Answer:15 days

4: A man goes to his office at a certain time. If his waking speed is 5 kmh then he is 7 minutes late. When his speed is 6 kmh he reaches 5 minutes before. How far his office from his house?  
[BKB SO -2017]

Solution:

Let,

Total distance between home to office be X km

According to the Question,

$X/5 - 7/60 = x/6 + 5/60$  [Time=distance/Speed]

Or,  $X/5 - x/6 = 5/60 + 7/60$

$\therefore X = 6$  km

Answer: 6 km

5: In a mixture the ratio of apples, peaches and grapes is 6:5:2. If the total mixture is 39 pounds then what is the difference between apples and grapes?

[BKB SO -2017]

Solution:

Given that,

The ratio of Apples, Peaches and Grapes= 6:5:2

$\therefore$  The sum of the ratio

= (6+5+2) =13

$\therefore$  The quantity of Apple

$$= (39 \times 6/13) = 18 \text{ pounds}$$

∴ The quantity of Grapes

$$= (39 \times 2/13) = 6 \text{ pounds} \quad \therefore \text{The more pounds of apple than grape} = (18-6) = 12 \text{ Pounds}$$

Answer: 12 pounds

## ➤ South East Bank PO-2017

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6. Selling 12 candies at a price of tk 10 yields a loss of x% and selling 12 candies at a price of tk 12 yields a profit of x% ∴ What is the value of x ?

[South East Bank PO-2017]

Solution:

Let,

12 candies cost price = Tk 100

x% loss selling price =  $(100-x)$

Selling price  $(100-x)$  then cp 100 tk

sp 10. "  $\{(100 \times 10)/(100-x)\}$

x% profit selling price =  $(100+x)$  tk

Selling price tk  $(100+x)$  then cp tk 100

Sp. 12. "  $\{(100 \times 12)/(100+x)\}$

According to the question,

$$\{(100 \times 10)/(100-x)\} = \{(100 \times 12)/(100+x)\}$$

Or,  $x = 9.09$

So, the value of X is 9.09

Answer: 9.09

2: A man deposits 5000 tk. at 5% annual interest for six months. In every six months he withdraws tk. 500 from his principal plus interest earned. What is the total amount of interest he received? [BKB SO -2017] [SEBL PO-2017]

Solution:

Given that,

Rate of interest is 5%

Since Interest Rate is semiannual,

$$= 5/2 = 2.5\%$$

So,

The total amount of Interest rate

he receive against Tk 5000

$$= \text{Tk. } (2.5\% \times 5000 + 2.5\% \times 4500 + 2.5\% \times 4000 + 2.5\% \times 3500 + 2.5\% \times 3000 + 2.5\% \times 2500 + 2.5\% \times 2000 + 2.5\% \times 1500 + 2.5\% \times 1000 + 2.5\% \times 500)$$

$$= \text{Tk. } 2.5\% \times 27500 = \text{Tk. } 687.5 \text{ Tk. Answer: } 687.5 \text{ Tk}$$

## IBBL ATO/CASH -2017 English Version:

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1.The length of a rectangle flower garden is 60 meter & breadth is 40 meter.For nursing the garden,there has two concrete crossroads with 5 meter width all along its length and the breadth right at the middle of garden

[IBBL ATO/CASH -2017 English Version]

a)Determine the area of the road?

Solution:

Length of the garden=60 meters

Breadth of the garden=40 meters

[Where the two roads cross each other which length=width= 5 meters]

We know,

The area of the road

= (Length of garden\*Length of crossroad)+ (Breadth of garden\*Width of crossroad)- (Length of crossroad\* Width of crossroad)

= {60\*5+40\*5-5\*5}

= 475 sq.meters.

b)How much cost to build with cement two concrete crossroads ;if each square meter is required tk 240 ?

Solution:

Cost of two concrete crossroads

=Tk.(475\*240)=Tk.114000

Ans: a) 475 sq. meters ;

b) Tk.114000

2.A merchant sold a article for Tk 482 there is a certain amount profit and sold the same article for Tk 318 loss incur equal to the previous profits.What is the selling price of the article,If the merchant sold the article at 40% profits?

[IBBL ATO/CASH -2017 English Version]

Solution:

Cost of the Article is =Tk. X

Sold the article for Tk 482, Profit=Tk.(482-x)

Sold the article for Tk 318, Loss=Tk.(x-318)

[Profit=Loss]

According to the question,

(482-x)= (x-318)

So, x=400

At 40% profits on cost price then Selling price  
=400\*140/100= Tk.560 Ans: Tk.560

## ➤ **Agrani Bank Senior Officer-2017**

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1. A dishonest merchant make a 15% profit at the time of buying and a 10% loss at the time of selling the goods. By doing so if the said merchant made a profit of Tk. 3500 on a particular item, what was the real cost of the item sold

[Agrani Bank Senior Officer-2017]

Solution-1:

Let,

Cost Price=X Tk

15% profit on cost price

Then market price=X + X of 15%

=1.15 X Tk

Again 10% loss on market price

Then Selling price

=1.15x -1.15x of 10%

=1.035x Tk

Now profits=Selling - Cost Price

=(1.035x - x) Tk

=0.035x Tk

When,

Profit.035x Tk then Cost Price=X Tk

-----3500Tk-----

=[(3500\*x)/.035x]

=1,00,000 Tk

Answer:1,00,000 Tk

### **Solution-2**

Let, cost price = 100 Tk.

At 15% profit the market price of the product will be=100+15=115 Tk.

At 10% loss, the sales price will be=115-(115\*10%)=Tk. 103.5 Tk.

So profit = 103.5-100= 3.5 Tk.

Now,

when profit 3.5 Tk. then cost 100 Tk.

when profit 3500 Tk. then cost (100/3.5)\*3500=1,00,000 Tk.

So, real cost is Tk. 1,00,000 (Ans.)

2. A alone can do a piece of work in 30 days,while B alone can do it in 15 days & C alone can do it in 10 days.If in every second day B and in every third day C help A in doing the work,how many days will be required to complete the whole work?

[BKB SO-2015][Agrani Bank SO-2017]

Solution:1

Let,

Total work=1 portion

LCM of 2 & 3=6

Per 6 days A work= 6 days

Per 6 days B work=(6/2)=3 days

Per 6 days C work=(6/3)=2 days

So,

6 days (A+B+C)'s work

$= (6/30 + 3/15 + 2/10)$  portion

$= 3/5$  portion

Remaining work

$= (1 - 3/5)$  portion

$= 2/5$  portion

After 2 days(A+B)'s work

$= (2/30 + 1/15)$ portion

$= 2/15$  portion

[Every second days B help A]

Remaining work

$= (2/5 - 2/15)$  portion

$= 4/15$  portion

Total time=(6+2)=8 days

9th day(A+C) work

$= (1/30 + 1/10)$  portion

$= 2/15$  portion

Remaining work

$= (4/15 - 2/15)$ portion

$= 2/15$  portion

Another 2 days(A+B)'s work

$= (2/30 + 1/15)$  portion

$= 2/15$  portion

Remaining work

$= (2/15 - 2/15)$

=0

So total time taken to finish the work=(9+2)=11 days

Answer:11 days

**Solution:2**

এখানে,

২ ও ৩ এর ল সা গু =৬

বলে প্রথমে ৬ দিনের কাজ বের করব। ক,খ,গ একএ প্রথম ৬ দিনে মোট কাজ করে

$= (৬/৩০) + (৩/১৫) + ২/১০)$

$= ৩/৫$  অংশ

বাকী কাজ  $= (১ - ৩/৫)$

$= ২/৫$  অংশ

যেহেতু  $২/৩ < ৩/৫$

ক,খ,গ একএ পরবর্তী ৩দিনে মোট কাজ করে  $= (৩/৩০ + ১/১৫ + ১/১০)$  অংশ

$= ৪/১৫$  অংশ

বাকী কাজ $= (২/৫ - ৪/১৫)$

= $\frac{2}{15}$  অংশ।

আবার  $\frac{2}{15} < \frac{8}{15}$  বলে

ক পরবর্তী একদিনে যেহেতু  $\frac{1}{10}$  অংশ কাজ করে

তাই বাকী কাজ =  $(\frac{2}{15} - \frac{1}{10})$

=  $\frac{1}{30}$  অংশ

এখন ক, খ একএ করবে  $\frac{1}{30}$  অংশ কাজ

সুতরাং ক, খ একএ ১ দিনে কাজ করে =  $(\frac{1}{10} + \frac{1}{15}) = \frac{1}{6}$  কাজ

বাকী কাজ:  $(\frac{1}{30} - \frac{1}{6}) = 0$

মোট সময় =  $6 + 7 + 1 + 1 = 15$  দিন

Answer : 11 days

3. Two trains, one from Dhaka and another from Chittagong simultaneously started to proceed towards each other at the speed of 16 km and 21 km per hour respectively. As the trains met each other it was found that one train travelled 60 km more than the other. Calculate the distance between Dhaka to Chittagong. [Agrani Bank Senior Officer-2017]

Solution:

Let,

Two trains met each other 't' hrs later

First train covered =  $(16 \times t)$  km

Second train covered =  $(21 \times t)$  km

Differences of distance two trains

= 60 km

According to the question,

$21t - 16t = 60$

Or,  $5t = 60$

Or,  $t = 12$

Total distance Dhaka to Chittagong

=  $(16 \times 12 + 21 \times 12)$

= 444 km

Answer: 444 km

4. Sakib and Labib individually borrowed different amount of money from a particular bank on the same day at rate of 20% simple interest. The total money paid by Sakib in 3 years as principal plus interest was the same amount Labib paid in 2 years as principal plus interest. Find the ratio of their individual loan amount. [Agrani Bank Senior Officer-2017]

[Sonali Bank Senior Officer-2015]

Solution:

Sakib and Labib borrowed amount

X & Y Tk respectively

According to the question,

$X + X \text{ of } 20\% \times 3 = Y + Y \text{ of } 20\% \times 2$

Or,  $X + 0.6X = Y + 0.4Y$

Or,  $1.6X = 1.4Y$  Or,  $X:Y = 1.4:1.6$  or  $7:8$

Answer: 7:8



5. The perimeter of a square is equal to the perimeter of rectangle. The length of the rectangle is three times longer than its width having total area of 1200 sq. meter. what will be the total cost cost if the total area of the square is covered with stones having a dimension of 50 centimeter square each & if tk.50 is charged for placing a stone in the square?

[Agrani Bank Senior Officer-2017]

[Sonali Bank Senior Officer-2015]

Solution:

Let,

Breadth of rectangle =  $x$  m

And length of Rectangle =  $3x$  m

According to the question,

$$3x^2 = 1200$$

$$x = 20$$

Length of rectangle = 60m

Perimeter of rectangular

$$= 2(60+20) = 160\text{m}$$

As per question,

Perimeter of rectangular = perimeter of square = 160m

Side of square =  $160/4$

$$= 40\text{m or } 4000\text{ cm}$$

area of square =  $(4000 \times 4000)\text{sq.cm}$

Square of stone

$$= (50)^2$$

$$= 2500\text{ sq.cm}$$

$$\text{number of stones} = (4000 \times 4000) / 2500 = 6400$$

$$\text{Total cost} = 6400 \times 50 = 320000$$

Answer: 3,20,000 Tk

NOTE: ৫০ সে.মি বর্গ অর্থ বর্গের একটি বাহুর দৈর্ঘ্য ৫০ সে.মি।

## SBC AM-2016

1. একজন দোকানদার ৬% ক্ষতিতে একটি দ্রব্য বিক্রয় করিল। যদি দ্রব্যটির ক্রয়মূল্য ৪% কম হইতো এবং বিক্রয়মূল্য ৪ টাকা বেশি হইতো, তাহা হইলে তাহার ১২.৫% লাভ হইতো। দ্রব্যটির ক্রয়মূল্য কত?

[SBC AM-2016]

Solution:

৬% লাভে বিক্রয়মূল্য

$$= (100 + 6) = 106 \text{ টাকা}$$

এবং ৪% কমে ক্রয়মূল্য

$$= (100 - 8) = 92 \text{ টাকা}$$

১২.৫% লাভে বিক্রয়মূল্য,

ক্রয়মূল্য ১০০ টাকা হলে বিক্রয়মূল্য ১১২.৫ টাকা

ক্রয়মূল্য ১ টাকা হলে বিক্রয়মূল্য  $112.5/100$  টাকা

ক্রয়মূল্য ৯৬ টাকা হলে বিক্রয়মূল্য  $112.5 \times 96/100 = 108$  টাকা

সুতরাং, বিক্রয়মূল্য এর পার্থক্য

$$= (108 - 106) = 2 \text{ টাকা}$$

যখন বিক্রয়মূল্য ২ টাকা বেশি হয় তখন ক্রয়মূল্য = ১০০ টাকা  
 যখন বিক্রয়মূল্য ১ টাকা বেশি হয় তখন ক্রয়মূল্য = ১০০/২ টাকা  
 যখন বিক্রয়মূল্য ৪ টাকা বেশি হয় তখন ক্রয়মূল্য = (১০০\*৪/২) = ২০০ টাকা  
 উত্তর : ২০০ টাকা

2: 20 workers can finish a work in 30 days. After how many days should 5 workers leave the job so the work is completed in 35 days?[BKB SO -2017][SBC AM -2016]

Solution:

Let,

After x days 5 men should leave

20 workers do in 30 days 1 part

$20 \times 1 \times \frac{1}{30}$

$x \times 1 \times \frac{x}{30}$

Now

worker Remaining=( 20-5)=15

Day left = (35-x)

And

Suppose

Total portion of work be =1

then,

20 men in 30 d. do 1 part

$1 \times 1 \times \frac{1}{20 \times 30}$

15 men 35-x "  $\{15 \times (35-x)/20 \times 30\}$

According to the question,

$x/30 + 15 \times (35-x)/20 \times 30 = 1$

=====

x=15

Answer:15 days

3.  $2x - (2/x)=3$ , then the value of

$x^2 + 1/x^2$

Answer:1/4

## ➤ SBC JO-2016

1. একটি অডিটরিয়ামে সারিতে সজ্জিত মোট ৬১৬টি আসন আছে। প্রতি সারিতে আসন সংখ্যা মো সারির সংখ্যার চেয়ে ৬টি বেশি হলে, প্রতি সারিতে আসন সংখ্যা নির্ণয় করুন।[SBC JO-2016]

Total row be x

So, each row contains seat be(x+6)

According to the question,

$x(x+6)=616$

=====

=====

Or,  $(x+28)(x-22)=0$

Either,

$x+28=0$

Or,  $x=-28$ [It is not acceptable]

Or,

$x-22=0$

Or,  $x=22$

Hence, Each row contains  $(22+6)=28$  seat  
Answer: 28

2. প্রতি ডজন কলা ২৪ টাকায় ক্রয় করে প্রতি কুড়ি কি দরে বিক্রয় করলে ২৫% লাভ হবে? [SBC JO-2016]

Solution:

Given that,

12 bananas cost price 24 tk

25% profit selling price 125 tk

Cost price 100 tk then selling price 125 tk

Cost price 24 tk then selling price  $\{(125 \times 24) / 100\}$   
= 30 tk

So,

12 bananas selling price 30 tk

20 bananas selling price  $\{(30 \times 20) / 12\}$

= 50 TK

Answer: 50 TK

3.  $x^2 - (7x/3) - 2 = 0$  find the value of x [SBC JO-2016]

Answer: 3 or -2/3

## Sonali Bank Senior Officer-2014

1. মনিষা ও মাইশা একই ব্যাংক থেকে একই দিনে ২০% সরল মুনাফায় আলাদা আলাদা পরিমাণ ঋণ গ্রহণ করে। মনিষা ৩ বছর পর মুনাফা আসলে যত পরিশোধ করে, মাইশা ২ বছরে মুনাফা আসলে তত পরিশোধ করে। তাদের ঋণের অনুপাত কত?

[Sonali Bank Senior Officer-2014]

সমাধান:

ধরি,

মনিষা ঋণ নিয়েছিল = x টাকা

মাইশা ঋণ নিয়েছিল = y টাকা

২০% মুনাফায় মনিষার ক্ষেত্রে,

৩ বছরের সুদ

$= \{(20 \times 3 \times x) / 100\}$

=  $0.6x$  টাকা

এবং সুদাসল =  $\{x + (0.6x)\} = 1.6x$  টাকা

মাইসার ক্ষেত্রে ২ বছরের মুনাফা,

$= \{(20 \times 2 \times y) / 100\} = 0.4y$  টাকা এবং

সুদাসল =  $\{(0.4y) + y\} = 1.4y$  টাকা

শর্তমতে,

$1.6x = 1.4y$

বা,  $8x = 7y$

বা,  $x:y = 7:8$

ঋণের অনুপাত ৭:৮

উওর:৭:৮

২.এক ব্যক্তি মাসিক বেতনে চাকরি করেন। বছর শেষে নির্দিষ্ট Increment (বেতন বৃদ্ধি) পান। ৪ বছর পর তার ৩৫০০ টাকা এবং ১০ বছর পর ৪২৫০ টাকা হলে, তার মাসিক কত টাকা বেতন চাকরি মুরু হয় এবং বার্ষিক Increment কত ?

[Sonali Bank Senior Officer-2014]

মনে করি,

ঐ ব্যক্তি চাকুরি শুরু হয়= $x$  টাকায়

এবং বার্ষিক increment= $y$  টাকা

৪ বছরে increment হয় = $8y$  টাকা

১০ বছরে increment হয় = $১০y$  "

$$x + ১০y = ৪২৫০ \text{-----}(1)$$

$$x + ৪y = ৩৫০০ \text{-----}(2)$$

-----

$$(-) ৬y = ৭৫০$$

$$\text{বা, } y = ১২৫$$

(1) নং এ বসিয়ে পাই,

$$x + ৪ \times ১২৫ = ৩৫০০$$

$$\text{বা, } x = ৩০০০$$

উত্তর : চাকুরি শুরু হয় ৩০০০ টাকায়,

Increment ১২৫ টাকা।

৩.একটি বর্গক্ষেত্রের পরিসীমা একটি আয়তক্ষেত্রের পরিসীমার সমান। আয়তক্ষেত্রের দৈর্ঘ্য প্রস্থের ৩ গুণ এবং ক্ষেত্রফল ১২০০ বর্গমিটার। প্রতিটি ৫০ cm বর্গকার পাথর দিয়ে বর্গক্ষেত্রটি বাঁধাতে মোট কতটি পাথর লাগবে ?

[Sonali Bank Senior Officer-2014]

সমাধান:

মনে করি,

আয়তক্ষেত্রের প্রস্থ  $x$  মি

আয়তক্ষেত্রের দৈর্ঘ্য  $৩x$  মি

শর্তমতে,

$$৩x^2 = ১২০০$$

$$\text{বা, } x^2 = ৪০০$$

$$\text{বা, } x = ২০$$

সুতরাং,

আয়তক্ষেত্রের প্রস্থ ২০ মি

আয়তক্ষেত্রের দৈর্ঘ্য ৬০ মি

আয়তক্ষেত্রের পরিসীমা

$$= ২(৬০ + ২০) = ১৬০ \text{ মি}$$

যেহেতু একটি বর্গক্ষেত্রের পরিসীমা একটি আয়তক্ষেত্রের পরিসীমার সমান

সুতরাং বর্গক্ষেত্রের পরিসীমা = ১৬০ মি

এবং বর্গক্ষেত্রের একবাহু ৪০ মি

তাই বর্গক্ষেত্রের ক্ষেত্রফল

$= (80 \times 80) = 1600$  বর্গমি  
প্রতিটি পাথরের দৈর্ঘ্য ৫০ সে.মি  
 $= 0.5$  মি.  
প্রতিটি পাথরের ক্ষেত্রফল  
 $= (0.5 \times 0.5)$  বর্গমি  
 $= 0.25$  বর্গমি.

সুতরাং প্রতিটি ৫০ cm বর্গকার পাথর দিয়ে বর্গক্ষেত্রটি বাঁধতে মোট পাথর লাগবে  $= 1600 / 0.25$   
 $= 6400$  টি  
উত্তর: ৬৪০০ টি

## ➤ Sonali Bank Officer-2014

১. ১৩.৫% মুনাফায় কত টাকা ৫ বছরে মুনাফা আসলে ৮৩৭৫ টাকা হবে? কত বছরে ঐ টাকা মুনাফা আসলে ১০৪০০ টাকা হবে?

[Sonali Bank Officer-2014]

Solution:

For 13.5% interest,

Tk. 100 one year interest 13.5 tk

Tk. 100 5 years interest  $(13.5 \times 5)$

$= 67.5$  tk

So, Amount  $= (100 + 67.5) = 167.5$  tk

When amount 167.5 tk then principal 100 tk

When amount 8375 tk then principal  $= \{(100 \times 8375) / 167.5\}$

$= 5000$  tk

Second Case:

Amount be  $= 10400$  tk

So, Principal  $= (10400 - 5000) = 5400$  tk

Again,

Tk 100 one year interest 13.5 tk

Tk 5000 one year interest

$= \{(5000 \times 13.5) / 100\} = 675$  tk

Tk. 675 interest from 1 year

Tk 5400 interest from

$= (5400 / 675) = 8$  years

Answer: 8 Years

২: এক অসাধু ব্যবসায়ী একটি দ্রব্যের ক্রয় ও বিক্রয় উভয় ক্ষেত্রেই ১০% লাভ করায় তার মোট ৬৩০ টাকা লাভ হয়, তা হলে উক্ত দ্রব্যটির ক্রয়মূল্য কত ছিল?

[Sonali Bank officer -2014]

[Same As SEBL-2015]

Solution-1:

The market price of 1 unit goods be Tk x

So, 100 units of goods  $= 100 \times$  Tk

But ,at the time of buying,the merchant paid 100x Tk and received

$= (100 + 100 \text{ of } 10\%)$

$$=110$$

So, the real cost of 110 units to the merchant

$$=100 \times \text{Tk}$$

At the time of selling, the merchant charged

$$=110x/100$$

So,

Sold of 110 units

$$=110 \times (110x/100)$$

$$=121x \text{ Tk}$$

Net profit,

$$=121x - 100x$$

$$=21x \text{ Tk}$$

According to the question,

$$21x = 630$$

$$\text{Or, } x = 30 \text{ Tk}$$

So,

The real cost price of the product

$$=100 \times 30$$

$$=3000 \text{ Tk}$$

Answer: 3000 Tk

#### Solution-2:

Let,

$$\text{Cost Price} = X \text{ Tk}$$

10% profit on cost price Then market price

$$=X + X \text{ of } 10\%$$

$$=1.1 X \text{ Tk}$$

Again 10% profits on market price

Then Selling price

$$=1.1x + 1.1x \text{ of } 10\%$$

$$=1.21x \text{ Tk}$$

Now profits = Selling - Cost Price

$$=(1.21x - x) \text{ Tk}$$

$$=0.21x \text{ Tk}$$

When,

$$\text{Profit } .21x \text{ Tk then Cost Price} = X \text{ Tk}$$

$$\text{-----} 630 \text{ Tk} \text{-----}$$

$$=[(630 \times x) / .21x]$$

$$=3000 \text{ Tk}$$

#### Solution-3:

Let,

$$\text{Cost Price of the article} = 100 \text{ Tk}$$

10% profit on cost price then

$$\text{Market price} = (100 + 100 \text{ of } 10\%)$$

$$=110 \text{ Tk}$$

Again,

10% profits on market price then selling price=(110+110 of 10%) Tk

=121 Tk

Now,

Profit=(121-100)=21 Tk

When

Profit 21 Tk then Cost Price=100 tk

-----630 Tk -----

=[(100\*630)/21]

=3000 Tk

Answer:3000 Tk

**Solution-4:====**

**Short Cut/MCQ Way**

Let , Cost Price=100 Tk

10% profits on both way

Profit

=10+10+[(10\*100)/100]

=21 Tk

Profit 21 then CP =100 TK

-----630 TK -----=[100\*630/21]

=3000 TK

Answer:3000 Tk

3. 21 মিটার দৈর্ঘ্য ও ১৫ মিটার প্রস্থ বিশিষ্ট একটি বাগানের বাইরের চারদিকে ২ মিটার চওড়া একটি পথ আছে। প্রতি বর্গমিটার ২৫ টাকা হিসেবে পথটিতে ঘাস লাগাতে মোট কত টাকা খরচ হবে ?

[Sonali Bank Officer-2014]

Solution:

Length of garden with path

=21+2\*2=25 meter

Breadth of garden with path

=15+2\*2=19 meter

Area of the garden with path

=(25\*19)=475 square meter

Area of the garden without path

=(21\*15)=315 square meter

Area of the path =(475-315)=160 meter

Total cost to cover the path with grass

=160\*25

=4000 tk

Answer:4000 tk

### ➤ **Sonali Bank Officer(IT)-2016**

1.The salary of Lamia and Farzin in the ratio of 7:5 and total of their salary is tk 12000. If their annual increments are tk 200 and 150 respectively. What will be the ratio of their salary after one year?[Sonali Bank Officer(IT)-2016]

solution

Let,

Salary of Lamia= $7x$

Salary of Farzin= $5x$

According to the question,

$$7x + 5x = 12000$$

$$\text{Or, } x = 1000$$

So, after one year salary of

$$\text{Lamia} = 7 \times 1000 + 200 = 7200$$

$$\text{Farzin} = 5 \times 1000 + 150 = 5150$$

$$\text{Ratio} = 7200 : 5150 = 144 : 103$$

Ans: 144:103

2. A man is standing on a railway bridge which is 180 meters long. He finds that a train crosses the bridge in 20 seconds and crosses him in 8 seconds. Find the length of the train and its speed. [Sonali Bank Officer(IT)-2016]

solution-1:

Actually The Train

$$(20-8) = 12 \text{ second goes } 180 \text{ meters}$$

$$\text{So, The } 20 \text{ sec goes} = [(180 \times 20) / 12]$$

$$= 300 \text{ meter}$$

So, Length of train

$$= (300 - 180) = 120 \text{ meter}$$

And

Speed of train

$$= (120 / 8) \text{ m/s}$$

$$= [(120 / 8) \times 18 / 5] \text{ km/hr}$$

$$= 54 \text{ km/hr}$$

Answer: 120 meter & 54 km/hr

**Solution-2:**

Let,

Length of the train =  $x$

According to the question,

$$(180 + x) / 20 = x / 8$$

$$\Rightarrow 20x = 144 + 8x$$

$$\Rightarrow 12x = 1440$$

$$\Rightarrow x = 120$$

Solving equation  $x = 120$

$$\text{Speed} = [120 \times 3600 / 8]$$

$$= 54000 \text{ meter}$$

$$= 54 \text{ km}$$

So length = 120 meter

speed = 54 km/hr

Answer: 120 meter & 54 km/hr



3. A man goes upstream at 10 km/hr to a place and back downstream to same point at 6 km/hr.  
What is his average speed his journey  
[Sonali Bank Officer(IT)-2016]

Solution

Let, distance = 30 km [LCM of 10 & 6]

Upstream time

$$= 30/10$$

$$= 3 \text{ hours}$$

Downstream time

$$= 30/6$$

$$= 5 \text{ hours}$$

Total distance

$$= 30 + 30 = 60 \text{ km}$$

Total time = 5 + 3 = 8 hours

Average speed

$$= 60/8 = 7.5 \text{ km/hr}$$

Answer: 7.5 km/hr

=====

4. The sum of the present age of father and son is 50 years, when son's age will be equal to the father's present age then the sum of their age shall be 102, what is father's present age?

[Sonali Bank Officer(IT)-2016]

Solution-1:

Let,

Father present age = F years

Son's present age = S years

So,

$$F + S = 50 \dots\dots (1)$$

When son age equal to father present age the sum of their age = 102 years

Total age increased = (102 - 50)

$$= 52 \text{ years}$$

Individual age increased

$$= 52/2 = 26 \text{ years}$$

After 26 years later son's age equal to father age

According to the question,

$$S + 26 = F$$

$$\text{or, } F - S = 26 \dots\dots (2)$$

from Equations 1 & 2

Father = 38 years

Son = 12 years

Answer: 38 years

**Solution-2:**

Let,

father's age = x

son's age =  $50 - x$

Difference of their age =  $x - (50 - x) = 2x - 50$

So after  $2x - 50$  years son age will be equal to father's present age

According to the question,

$$x + x + 2x - 50 = 102$$

$$\Rightarrow x = 38$$

So father's age = 38 years

son's age =  $50 - 38 = 12$  years

Answer: 38 years

5. By selling a table for tk 39 gain is as much percentage as its cost. what is the cost price?

[Sonali Bank Officer(IT)-2016]

Solution:

Let,

Cost price =  $x$

$x\%$  gain selling price =  $x \times x / 100$

According to the question,

$$x + x \times x / 100 = 39$$

$$\Rightarrow 100x + x^2 = 3900$$

$$\Rightarrow x^2 + 130x - 3900 = 0$$

$$\Rightarrow (x + 130)(x - 30) = 0$$

So,  $x = -130$  [Not accepted]

or

$$x - 30 = 0$$

So  $x = 30$

The cost price 30 Tk

Answer: 30 Tk

### ➤ Sonali Bank SO(IT)-2016

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1. A boat takes 3 hours to travel to a certain distance with the stream, and returns to the original place in 5 hours. How long will it take to travel the same distance in stationary water?

[Sonali Bank SO(IT)-2016]

Solution-1:

Let,

Speed of boat in stationary water =  $x$

Speed of current =  $y$

Downstream Speed =  $(x + y)$  km/hr

Upstream Speed =  $(x - y)$  km/h

We know,

Distance = speed \* time

Downstream distance =  $3(x + y)$

Upstream distance =  $5(x - y)$

According to the question,

$$3(x + y) = 5(x - y)$$

$$\text{Or, } 3x + 3y = 5x - 5y$$

$$\text{Or, } x = 4y$$

$$\text{Distance} = 3(x + y)$$

$$= 3 \cdot 5y$$

$$= 15y$$

Time taken to the same distance in stationary water

$$= 15y / 4y$$

$$= 3 \text{ hrs } 45 \text{ minutes}$$

Answer: 3 hrs 45 minutes

Solution-2:

Let, the speed of the boat =  $x$  kmph,

the speed of the stream =  $y$  kmph,

and the distance =  $d$  km.

According to the question:

$$x + y = d/3 \text{ ----- (i)}$$

&

$$x - y = d/5 \text{ ----- (ii)}$$

$$(i) + (ii) \Rightarrow$$

$$2x = d/3 + d/5 = 8d/15$$

$$x = 4d/15$$

$$\text{Required time} = \text{Distance/Speed} = d/x = d/(4d/15) = 15/4 \text{ hrs} = 3 \text{ hrs and } 45 \text{ mins.}$$

Ans: 3 hours and 45 minutes.

2. A man has Tk300000. He invests a part of the amount at 8%, and the remaining amount at 10% p.a. At the end of the year he earns a profit of Tk25600 from his entire investment. Find the amount he invested under each rate.

[Sonali Bank SO(IT)-2016]

Solution:

Suppose,

He invested Tk  $x$  at 8% rate.

So, He invested Tk  $(300000 - x)$  at 10% rate.

According to the question,

$$0.08x + 0.1(300000 - x) = 25600$$

$$\text{Or, } 0.08x + 30000 - 0.1x = 25600$$

$$\text{Or, } 0.02x = 4400$$

$$\text{Or, } x = 4400 / 0.02$$

$$\text{Or, } x = 220000$$

So, he invested Tk220000 at 8% rate,

and Tk $(300000 - 220000)$  or Tk80000 at 10% rate.

Ans: Tk220000 at 8%, Tk80000 at 10%.

3. M purchased a 30-inch TV whose height was 18 inches. If the size of a TV is expressed as the lengths of its diagonal, find the width of the TV M purchased.

[Sonali Bank SO(IT)-2016]

Solution:

Let,

The width of the TV = X inches.

According to the question:

$$X^2 + 18^2 = 30^2$$

$$\text{Or, } X^2 = 900 - 324$$

$$\text{Or, } X^2 = 576$$

$$\text{Or, } X = 24$$

So, the width of the TV is 24 inches.

Ans: 24 inches.

4. The ratio of the girls and boys in a class was 2:5. If two new girls join the class, the ratio becomes 1:2. What was the total number of students in the class?

[Sonali Bank SO(IT)-2016]

Solution:

Let,

the number of girls = 2p, the number of boys = 5p

And the total number of students in the class = 2p + 5p = 7p

According to the question:

$$(2p+2) : (5p) = 1 : 2$$

$$\text{Or, } (2p+2)/(5p) = 1/2$$

$$\text{Or, } 5p = 4p + 4$$

$$\text{Or, } p = 4$$

So, the total number of students in the class was =  $7 \times 4 = 28$ .

Ans: 28

5. How many liters of a solution that is 15% salt must be added to 5 liters of a solution that is 8% salt so that the resulting solution is 10% salt?

[Sonali Bank SO(IT)-2016]

Solution:

Suppose,

X liters of 15% should be added.

According to the question:

$$15\% \text{ of } X + 5 \times 0.08 = 10\% \text{ of } (X+5)$$

$$\text{Or, } 0.15X + 0.4 = 0.10(X+5)$$

$$\text{Or, } 0.15X + 0.4 = 0.10X + 0.5$$

$$\text{Or, } 0.15X - 0.10X = 0.5 - 0.4$$

$$\text{Or, } 0.05X = 0.1$$

$$\text{Or, } 5X = 10 \text{ Or, } X = 2 \text{ Ans: 2 liters.}$$

**Question-01:** A depositor deposited 4000 at x% and 5000 at y% and earned 320 as interest. if he could deposit 5000 at x% and 4000 at y% then he would earn 310. what is value of x and y.  
[Dhaka Bank Cash-2018][Basic Bank AM-2018] [Janata Bank EO/FA-2015]

**Solution:**

According to the question,

$$4000 \times x/100 + 5000 \times y/100 = 320$$

$$40x + 50y = 320$$

$$\text{Or, } 4x + 5y = 32 \text{-----(1)}$$

In the same way

$$(5000 \times x)/100 + (4000 \times y)/100 = 310$$

$$\text{Or, } 5x + 4y = 31 \text{-----(2)}$$

By doing  $(1) \times 5 - (2) \times 4 =$

$$20x + 25y = 160$$

$$20x + 16y = 124$$

-----

$$\text{Or, } 9y = 36$$

$$\text{Or, } y = 4$$

Putting value of y in equation (1)

$$4x + 5 \times 4 = 32$$

$$\text{Or, } x = 3$$

So the value of (x,y)=(3,4)

**Ans:** (3,4)

4: A man goes to his office at a certain time. If his walking speed is 5 kmh then he is 7 minutes late. When his speed is 6 kmh he reaches 5 minutes before. How far his office from his house?

[BKB SO -2017] [Janata Bank EO/FA-2015]

**Solution:**

Let,

Total distance between home to office be X km

According to the Question,

$$X/5 - 7/60 = x/6 + 5/60 \text{ [Time=distance/Speed]}$$

$$\text{Or, } X/5 - x/6 = 5/60 + 7/60$$

$$\therefore X = 6 \text{ km}$$

Answer: 6 km

## **Bank Aia MTO/PO-2015**

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1. A dishonest merchant makes a 10% profit at the time of buying and a 5% loss at the time of selling the goods. By doing so if the said merchant made a profit of Tk. 900 on a particular item, what was the real cost of the item? [Bank Asia PO/MTO-2015]

**Solution:**

Let, cost price = 100 Tk.

At 10% profit on cost price then market price of the product will be  $=100+10=110$  Tk.

At 5% loss, the sales price will be  $=110-(110*5\%)=104.5$  Tk.

So profit  $=104.5-100=4.5$  Tk.

Now,

when profit 4.5 Tk. then cost 100 Tk.

when profit 900 Tk. then cost  $\{(100/4.5)*900\}=20,000$  tk

So, real cost is 20,000 tk(Ans.)

Note: Multiple solution see Sonali Bank

2. What will be the deposited amount at initial stage, if it becomes tk 43,750 the end of 5 years with a simple interest rate of 15% per annum? How many years it will take the same deposit amount to become tk 55,000 tk? [Bank Asia PO/MTO-2015]

15% interest rate 5 years interest be  $=15*5=75$  tk

So, amount be  $=100+75=175$  tk

When amount be 175 tk then principal be 100 tk

When amount be 43,750 tk then principal be  $\{(100 * 43,750)/175\}=25,000$  tk

Second case,

$P=25,000$  tk

$I=55,000-25,000=30,000$  tk and  $r=15\%$

So  $T=\{(30000*100)/(25000*15)\}=8$

Answer: 8 Years

**{All Question Solution and Arranged By Yousuf Ali}**